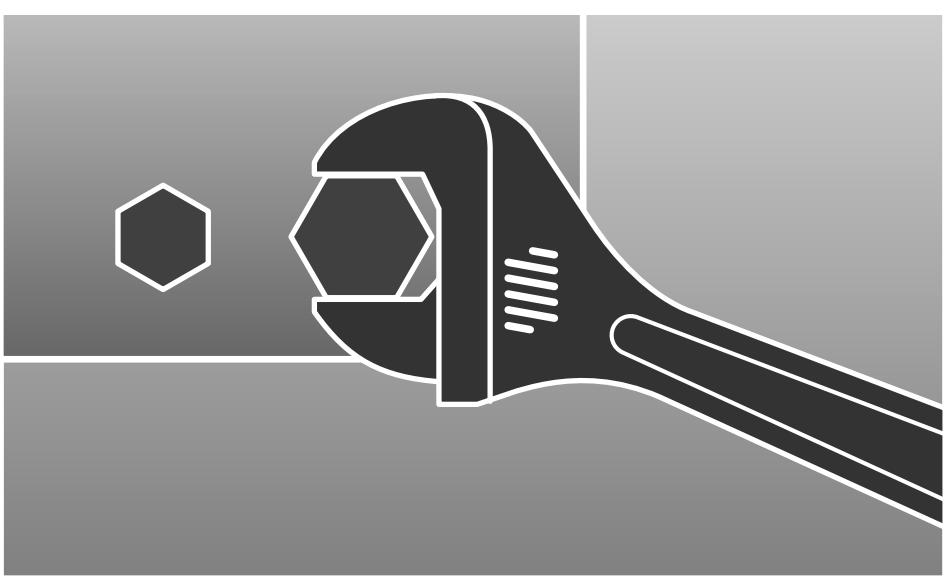
SAMSUNG

INSTALLATION MANUAL

SH09BWHA Series
SH12BWHA Series

Split-type Air Conditioner
(Cooling and Heating)



Ⓔ DB98-26315A(1)

Safety Precautions

The following safety precautions must be taken when using your air conditioner.

⚠ *WARNING* Risk of electric shock. • Can cause injury or death. • Disconnect all remote electric power supplies before servicing, installing or cleaning. • This must be done by the manufacturer or its service agent or a similar qualified person in order to avoid a hazard.

INSTALLING THE UNIT

- The unit should not be installed by the user. Ask the dealer or authorized company to install the units except room air conditioners for the U.S.A and Canada area.
- If the unit is installed improperly, water leakage, electric shock or fire may result.
- The air conditioner must be installed in accordance with national wiring regulations and safety regulations wherever applicable.
- Mount with the lowest moving parts at least 2.5 m above the floor or grade level. (If applicable)
- The manufacturer does not assume responsibility for accidents or injury caused by an incorrectly installed air conditioner. If you are unsure about installation, contact an installation specialist.
- When installing the built-in type air conditioner, keep all electrical cables such as the power cable and the connection cord in pipe, ducts, cable channels e.t.c to protect them against liquids, outside impacts and so on.

POWER SUPPLY LINE, FUSE OR CIRCUIT BREAKER

- If the power cord of this air conditioner is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- The unit must be plugged into an independent circuit if applicable or connect the power cable to the auxiliary circuit breaker. An all pole disconnection from the power supply must be incorporated in the fixed wiring with a contact opening of >3mm.
- Do not use an extension cord with this product.
- If the unit is equipped with a power supply cord and a plug, the plug must be accessible after installation.
- This appliance must be installed accordance with the national wiring regulations.

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Deciding on Where to Install the Air Conditioner

When deciding on the location of the air conditioner with the owner, the following restrictions must be taken into account.

General

Do NOT install the air conditioner in a location where it will come into contact with the following elements:

- Combustible gases
- Saline air
- Machine oil
- Sulphide gas
- Special environmental conditions

If you must install the unit in such conditions, first consult your dealer.

Indoor Unit

- There must be no obstacles near the air inlet and outlet.
- Install the indoor unit on a surface that can support its weight.
- Choose a position that enables the piping and cables to be easily connected to the outdoor unit and the recommended length of 7.5 metres to be respected (15 metres maximum).
- Leave enough clearance beneath the indoor unit to enable the filters to be removed without hindrance.
- Maintain sufficient clearance around the indoor unit, as indicated in the diagram on the page opposite.
- Make sure that the water dripping from the drain hose runs away correctly and safely.
- Install the indoor unit on the wall which is far from the floor by more than 2.5 metres.

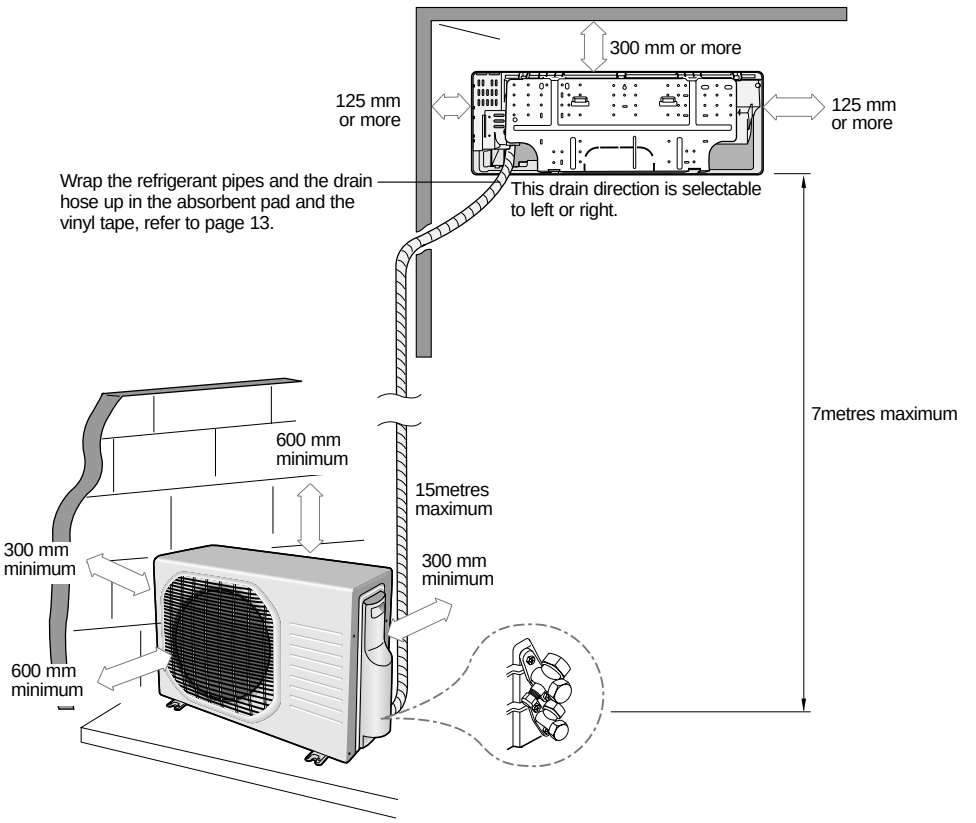
Outdoor Unit

- The outdoor unit must NEVER be placed on its side or upside down, as the compressor lubrication oil will run into the cooling circuit and seriously damage the unit.
- Choose a location that is dry and sunny, but not exposed to direct sunlight or strong winds.
- Do not block any passageways or thoroughfares.
- Choose a location where the noise of the air conditioner when running and the discharged air do not disturb any neighbours.
- Choose a position that enables the piping and cables to be easily connected to the indoor unit and the recommended length of 7.5 metres to be respected (15 metres maximum).
- Install the outdoor unit on a flat, stable surface that can support its weight and does not generate any unnecessary noise and vibration.
- Position the outdoor unit so that the air flow is directed towards the outside, as indicated by the arrows on the top of the unit.
- Maintain sufficient clearance around the outdoor unit, as indicated in the diagram on the page opposite.
- If the outdoor unit is installed at a height, ensure that its base is firmly fixed in position; the maximum height is 7metres.
- Make sure that the water dripping from the drain hose runs away correctly and safely.

CAUTION

- ***You have just purchased a split-type room air conditioner and it has been installed by your installation specialist.***
- ***This device must be installed according to the national electrical rules.***
- ***Max input power & current is measured according to IEC standard and input power & current is measured according to ISO standard.***

Respect the clearances and maximum lengths indicated in the diagram below when installing the unit.



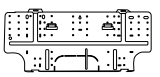
Air Conditioner and Accessories

The following accessories are supplied with the air conditioner.

➢ ***The quantities are indicated in parentheses.***

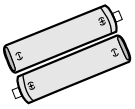
Accessories in the Indoor Unit Case

Installation Plate (1)



Remote Control (1)

Batteries for Remote Control (2)

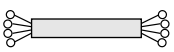


Owner's Instruction Booklet (1)

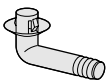
Installation Manual (1)

Accessories in the Outdoor Unit Case

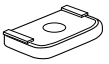
4-wire Assembly Cable (1)



Drain Plug (1)



Rubber LEG (4)



➢ ***The flare nuts are attached to the end of each evaporator in/out pipe or service valve. Use the nuts when connecting the pipe.***

➢ ***The 4-wire assembly cable is depending on the option. If they are not supplied, use the standard cable.***

➢ ***The drain plug and rubber leg are only included when the air conditioner is supplied without the assembly piping illustrated below.***

The following connection accessories may be supplied, depending on the option. If they are not supplied, it is recommended that you collect them together before starting to install the air conditioner.

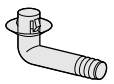
Assembly Piping, Ø6.35mm by 7.5m (1)

Assembly Piping, Ø9.52mm by 7.5m (1)

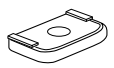
PE T3 Foam Tube Insulation (1)

Vinyl Tape, Width 50mm (1)

Drain Plug (1)



Rubber LEG (4)



Pipe Clamps A (3)

Pipe Clamps B (3)

M3.8 x 20 Screws for Wood (10)

M4 x 16 Tapped Screws (10)

Drain Hose, length 2m (1)

Putty 100g (1)

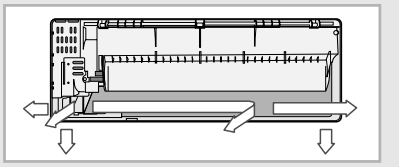
➢ ***If these accessories are supplied, they are located in the accessory box.***

Fixing the Installation Plate

Before fixing the installation plate to a wall or window frame, you must determine the position of the 65 mm hole through which the cable, piping and hose pass to connect the indoor unit up to the outdoor unit. When facing the air conditioner in position on the wall, the piping and cable can be connected from the:

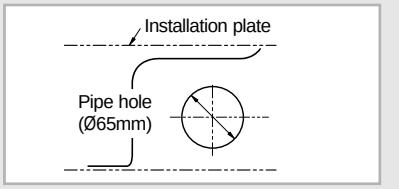
- ***Right***
- ***Left***
- ***Underside (right or left)***
- ***Rear (right or left)***

1 Determine the position of the pipe and drain hose hole using the right figure and drill the hole with an inner diameter of 65 mm so that it slants slightly downwards.



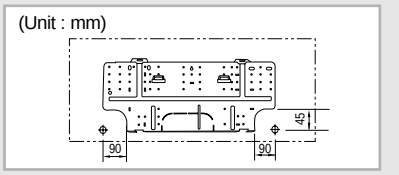
2

If you are fixing the indoor unit to a...	**Then follow Steps...**
Wall	**3**.
Window frame	**4** to **6**.



3 Fix the installation plate to the wall in a manner appropriate to the weight of the indoor unit.

➢ If you are mounting the plate on a concrete wall with anchor bolts, the anchor bolts must not project by more than 20 mm.



4 Determine the positions of the wooden uprights to be attached to the window frame.

5 Attach the wooden uprights to the window frame in a manner appropriate to the weight of the indoor unit.

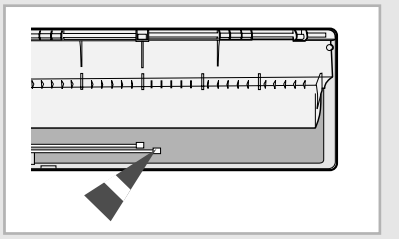
6 Using tapped screws, attach the installation plate to the wooden uprights, as illustrated in the last figure opposite.

Purging the Unit

On delivery, the indoor unit is loaded with an inert gas. All this gas must therefore be purged before connecting the assembly piping. To purge the inert gas, proceed as follows.

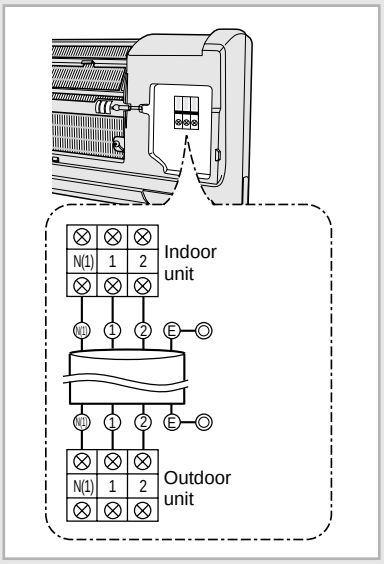
Unscrew the caps at the end of each pipe.

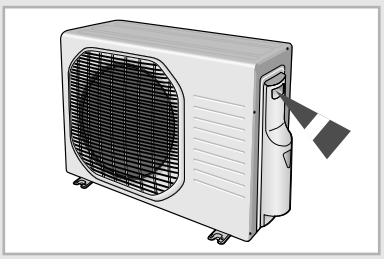
Result: All inert gas escapes from the indoor unit.



➢ ***To prevent dirt or foreign objects from getting into the pipes during installation, do NOT remove the caps completely until you are ready to connect the piping.***

Connecting the Assembly Cable





The outdoor unit is powered from the indoor unit via the assembly cable. If the outdoor unit is more than five metres away from the indoor unit, the cable must first be extended to a maximum of 15 metres.

1 Extend the assembly cable if necessary.

2 Open the front grille by pulling on the tabs on the lower right and left sides of the indoor unit.

3 Remove the screw securing the connector cover.

4 Pass the assembly cable through the rear of the indoor unit and connect the assembly cable to terminals as shown in the figure.

➢ Each wire is labeled with the corresponding terminal number.

5 Pass the other end of the cable through the 65 mm hole in the wall.

6 Replace the connector cover, carefully tightening the screw.

7 Close the front grille.

8 Remove the terminal board cover on the side of the outdoor unit.

9 Connect the cables to terminals as shown in the figure.

➢ Each wire is labeled with the corresponding terminal number.

10 Connect the earth wires to the earth terminals.

11 Replace the terminal board cover, carefully tightening the screw.

12 Connect the power cable with the indoor unit.

➢ ***Specially for Russian and European market, before installation, the supply authority should be consulted to determine the supply system impedance to ensure compliance.***

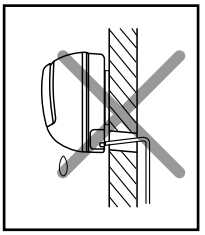
Power cable specification

Power cable	Interconnection cable	Power plug or circuit breaker
3G, 1.5mm^2, 10/16A H05VV-F	4G, 1.5mm^2 H07RN-F	Power plug with earth pole. (More than 15A)

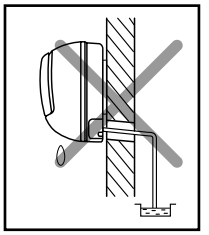
➢ ***Connect the power cable to the auxiliary circuit breaker. An all pole disconnection from the power supply must be incorporated in the fixed wiring(≥3mm).***

Installing and Connecting the Indoor Unit Drain Hose

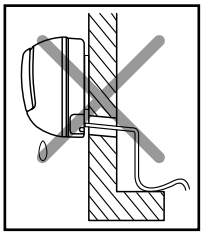
Care must be taken when installing the drain hose for the indoor unit to ensure that any condensation water is correctly drained outside. When passing the drain hose through the 65 mm hole drilled in the wall, check that none of the following situations occur.



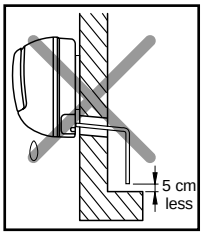
The hose must NOT slope upwards.



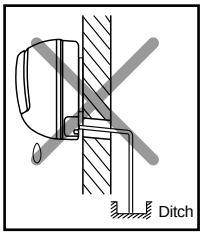
The end of the drain hose must NOT be placed in water.



Do NOT bend the hose in different directions.



Keep a clearance of at least 5 cm between the end of the hose and the ground.



Do NOT place the end of the drain hose in a hollow.

To install the drain hose, proceed as follows.

1 If necessary, connect the 2-metre extension to the drain hose.

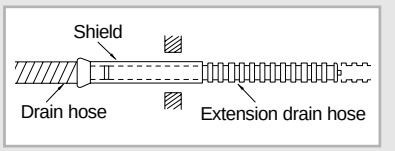
2 If you are using the extension, insulate the inside part of the extension drain hose with a shield.

3 Install a drain hose on one of two drain hose holes, then fix tight the end of a drain hose with a clamp.

➢ Block the rest you don't use with a rubber stopper.

4 Pass the drain hose under the refrigerant piping, taking care to keep the drain hose tight.

5 Pass the drain hose through the hole in the wall, making sure that it is sloping downwards, as shown in the illustrations above.



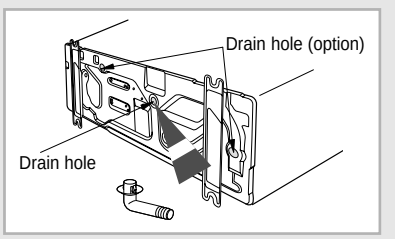
➢ ***The hose will be fixed permanently into position once the whole installation has been tested for gas leaks; refer to page 12 for further details.***

Installing and Connecting the Outdoor Unit Drain Hose

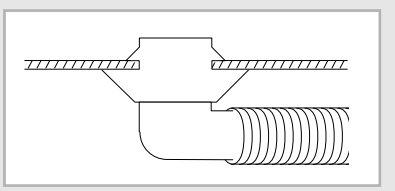
When using the air conditioner in the heating mode, ice may accumulate. During de-icing, the condensed water must be drained off safely. Consequently, you must install a drain hose on the outdoor unit, following the instructions below.

1 Insert the drain plug into the drain hole on the underside of the outdoor unit.

➢ There are 3 drain holes on the underside. You can use any hole for your convenience.



2 Connect the drain hose to the drain plug.



3 Ensure that the drained water runs off correctly and safely.

Installing and Connecting the Indoor Unit Assembly Piping

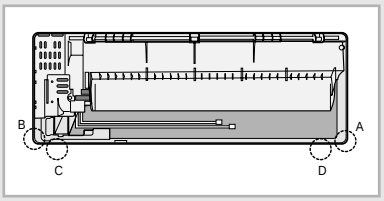
There are two refrigerant pipes of different diameters:

- ***A smaller one for the liquid refrigerant***
- ***A larger one for the gas refrigerant***

A short length of piping is already fitted to the air conditioner. You must extend this piping using assembly piping (optionally supplied).

The connection procedure for the refrigerant piping varies according to the exit position of the piping from the indoor unit, as seen when facing the air conditioner in position on the wall:

- ***Right (A)***
- ***Left (B)***
- ***Underside (C), (D)***
- ***Rear (C), (D)***



1 With a knife, cut out the appropriate knock-out piece on the rear of the indoor unit (unless you are connecting directly from the rear).

2 Smooth the cut edges.

3 Remove the protection caps on the pipes and connect the assembly piping to each pipe, tightening the nuts, first manually and then with a torque wrench, applying the following torque.

Outer Diameter	Torque (kgf•cm)
6.35 mm	140~170
9.52 mm	250~280

➢ If the piping must be shortened or extended, refer to page 11.

4 Cut off any excess foam insulation.

5 If necessary, bend the pipe round, along the bottom of the indoor unit and out through the appropriate hole, taking care to ensure that:
- The piping does not jut out from the rear of the indoor unit
- The bending radius is 100 mm or more

6 Pass the piping through the hole in the wall.

7 For further details on how to connect up to the outdoor unit and purge the circuit, refer to page 12.

➢ ***The piping will be insulated and fixed permanently into position once the whole installation has been tested for gas leaks; refer to page 13 for further details.***

Cutting/Extending the Piping

7.5 metres of piping is supplied with the air conditioner(Optional).
This length can if necessary be:

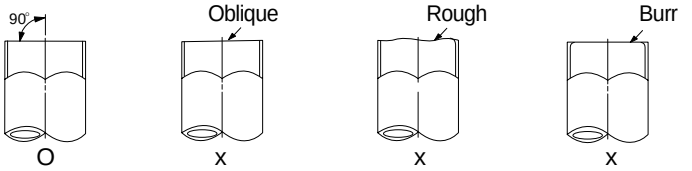
- ***Extended to a maximum of 15metres***
- ***Shortened as required***

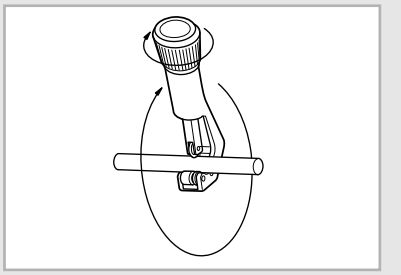
☞ ***If more than 7.5 metres of piping is required:***

- ***The assembly cable must also be extended***
- ***You can install 15m of connecting pipe to the maximum, and you don't have to charge any additional refrigerant.***

1 Make sure that you have the required tools available (pipe cutter, reamer, flaring tool and pipe holder).

2 If you wish to shorten the piping, cut it using a pipe cutter, taking care to ensure that the cut edge remains at a 90° angle with the side of the pipe, and referring to the illustrations below for examples of edges cut correctly and incorrectly.

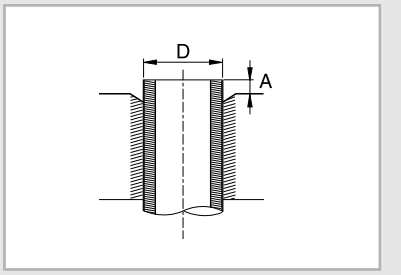




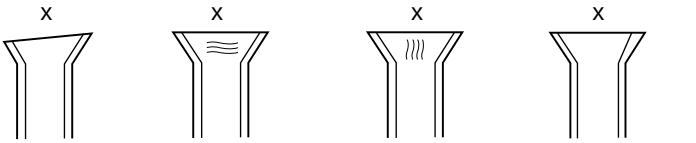
3 To prevent any gas from leaking out, remove all burrs at the cut end of the pipe, using a reamer.

4 Slide a flare nut on to the pipe and modify the flare.

Outer Diameter (D)	Depth (A)
6.35 mm	1.3 mm
9.52 mm	1.8 mm

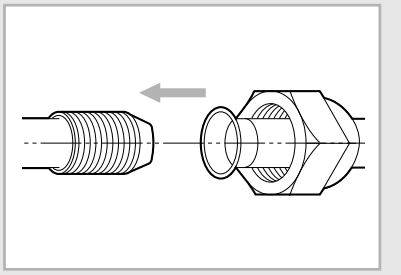


5 Check that the flaring is correct, referring to the illustrations below for examples of incorrect flaring.



6 Align the pipes to be connected and tighten the flare nuts first manually and then with a torque wrench, applying the following torque.

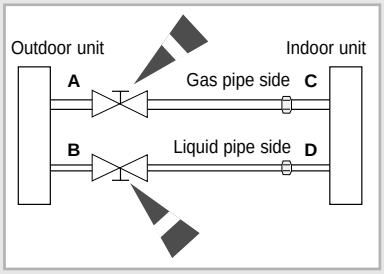
Outer Diameter	Torque (kgf•cm)
6.35 mm	140~170
9.52 mm	250~280

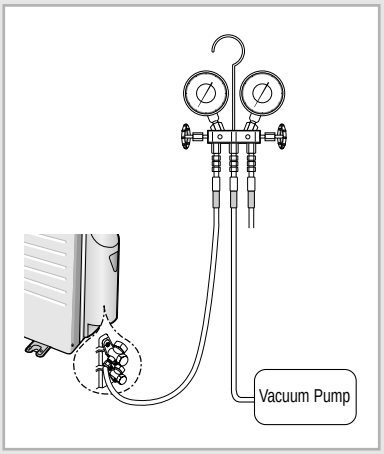


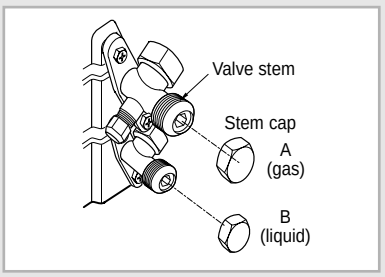
7 For further details on how to connect up to the outdoor unit and purge the circuit, refer to page 12.

Connecting Up and Purging the Circuit

The outdoor unit is loaded with sufficient R410A refrigerant for 7.5 metres of piping. The air in the indoor unit and in the pipe must be purged. If air remains in the refrigeration pipes, it will affect the compressor, reduce to cooling/heating capacity and could lead to a malfunction.
Refrigerant for air purging is not charged in the outdoor unit.
Use Vacuum Pump as shown at the figure.







1 Connect each assembly pipe to the appropriate valve on the outdoor unit and tighten the flare nut.

2 Referring to the illustration opposite, tighten the flare nut first manually and then with a torque wrench, applying the following torque.

Outer Diameter	Torque (kgf•cm)
6.35 mm	140~170
9.52 mm	250~280

3 Connect the charging hose of low pressure side of manifold gauge to the packed valve having a service port as shown at the figure.

4 Open the valve of the low pressure side of manifold gauge counterclockwise.

5 Purge the air from the system using vacuum pump for about 10 minutes.
- Close the valve of the low pressure side of manifold gauge clockwise.
- Make sure that pressure gauge show -0.1MPa(-76cmHg) after about 10minutes.
  This procedure is very important in order to avoid gas leak.
- Turn off the vacuum pump
- Remove the hose of the low pressure side of manifold gauge.

6 Set valve cork of both liquid side and gas side of packed valve to the open position.

7 Mount the valve stem nuts and the service port cap to the valve, and tighten them at the torque of 183kgf•cm with a torque wrench.

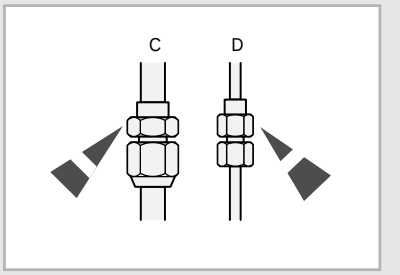
8 Check for gas leakage.
- At this time, especially check for gas leakage from the 3-way valve's stem nuts, and from the service port cap.

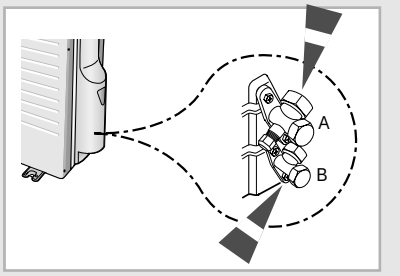
➢ ***You can install 15m of connecting pipe to the maximum, and you don't have to charge any additional refrigerant.***

Performing Leak Tests

Before completing the installation (insulation of the cables, hose and piping and fixing of the indoor unit to the installation plate), you must check that there are no gas leaks.

To check for gas leaks on the...	Then, using a leak detector, check the...
Indoor unit	Flare nuts at the end of sections C and D.
Outdoor unit	Valves on sections A and B.





Placing the Indoor Unit in Position

Once you have checked that there are no leaks in the system, you can insulate the piping, hose and cables and place the indoor unit on the installation plate.

1 To avoid condensation problems, place heat-resistant polyethylene foam separately around each refrigerant pipe in the lower part of the indoor unit.

2 Wrap the refrigerant pipes and the drain hose located at the rear of the indoor unit up in the absorbent pad.

- Triply wind the pipes and hose to the end of the indoor unit with the absorbent pad (make intervals of 20mm).

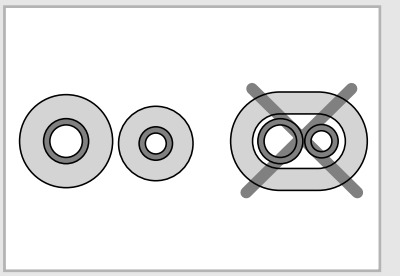
3 Wind insulating tape around the pipes, assembly cable and drain hose.

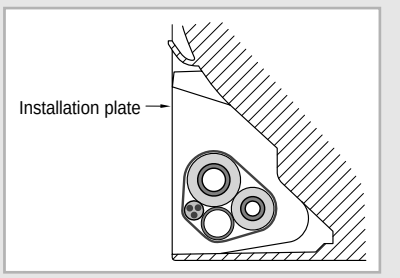
4 Place the resulting bundle carefully in the lower part of the indoor unit, making sure that it does not jut out from the rear of the indoor unit.

5 Hook the indoor unit on to the installation plate and move the unit to the right and left until you are sure that it is securely in place.

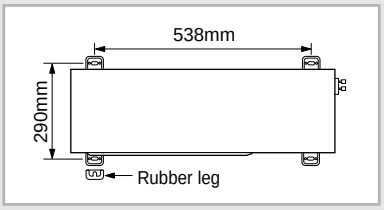
6 Finish wrapping vinyl tape around the rest of the piping leading to the outdoor unit.

7 Using clamps (optionally supplied), attach the piping to the wall wherever possible.





Fixing the Outdoor Unit in Position



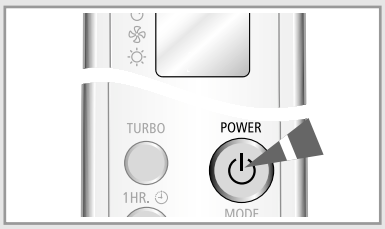
The outdoor unit must be installed on a rigid and stable base to avoid any increase in the noise level and vibration, particularly if the outdoor unit is to be installed close to a neighbour.

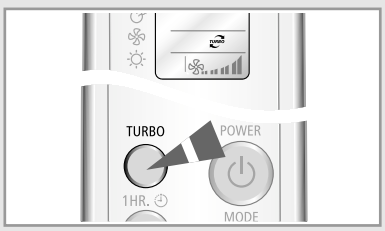
If it is to be installed in a location exposed to strong winds or at a height, the unit must be fixed to an appropriate support (wall or ground).

1	Position the outdoor unit so that the air flow is directed towards the outside, as indicated by the arrows on the top of the unit.
2	Attach the outdoor unit to the appropriate support using anchor bolts.
3	If the outdoor unit is exposed to strong winds, install shield plates around the outdoor unit, so that the fan can operate correctly.

➢ ***Certainly fix up its rubber leg, in order to prevent its vibration and noise.***

Checking and Testing Operations





To complete the installation, perform the following checks and tests to ensure that the air conditioner is operating correctly.

1 Review all the following elements in the installation:
- ◆ Installation site strength
- ◆ Piping connection tightness to detect any gas leakages
- ◆ Connection wiring
- ◆ Heat-resistant insulation of the piping
- ◆ Drainage
- ◆ Earthing wire connection
- ◆ Correct operations (follow the steps below)

2 Press the POWER button.

Result:
- ◆ The indicator lights on the indoor unit flash at half-second intervals.
- ◆ While the indoor unit opens, the indoor unit fan runs to start.

3 Press the TURBO button.

Result: The outdoor unit operates in cooling or heating mode as following the room temperature.

4 Air flow direction — Press the FLAP button and check that the air flow blades work properly.

Explaining Operations to the Owner

Before leaving the premises on which you have installed the air conditioner, you should explain the following operations to the owner, making reference to the appropriate pages in the owner's instruction booklet.

1	How to start and stop the air conditioner.
2	How to select the operating mode and adjust the temperature and fan settings.
3	How to adjust the air flow direction.
4	How to set the timers.
5	How to remove and clean the filters.

➢ ***Once the owner is happy with the basic operations, hand over the owner's instruction booklet and this installation manual for storage in a handy and safe place.***

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